The Journal of Emergency Medicine, Vol. 52, No. 3, pp. 324–331, 2017

0736-4679/$ - see front matter

http://dx.doi.org/10.1016/j.jemermed.2016.11.013

Techniques and Procedures

AWAKE LARYNGOSCOPY IN THE EMERGENCY DEPARTMENT

Joseph E. Tonna, MD* and Peter M. C. DeBlieux, MD†

*Division of Cardiothoracic Surgery & Division of Emergency Medicine, Department of Surgery, University of Utah School of Medicine, Salt Lake City, Utah and †Section of Emergency Medicine; Section of Pulmonary and Critical Care, Department of Medicine, Louisiana State University School of Medicine, New Orleans, Louisiana

Reprint Address: Joseph E. Tonna, MD, Division of Cardiothoracic Surgery & Division of Emergency Medicine, Department of Surgery, University of Utah School of Medicine, 30 N. 1900 E., 3C127, Salt Lake City, UT 84132

☐ **Abstract—Background: Many emergency physicians gain familiarity with the laryngeal anatomy only during the brief view achieved during rapid sequence induction and intubation. Awake laryngoscopy in the emergency department (ED) is an important and clinically underutilized procedure. Discussion: Providing benefit to the emergency physician through a slow, controlled, and deliberate examination of the airway, awake laryngoscopy facilitates confidence in the high-risk airway and eases the evolution to intubation, should it be required. Emergency physicians possess all the tools and skills required to effectively perform this procedure, through either the flexible endoscopic or rigid approaches. The procedure can be conducted utilizing local anesthesia with or without mild sedation, such that patients protect their airway. Conclusion: We discuss two clinical scenarios, indications/contraindications, patient selection, and steps to performing two approaches to awake laryngoscopy in the ED.** © **2016 Elsevier Inc. All rights reserved.**

☐ **Keywords—laryngoscopy; awake look; awake intubation; airway management**

INTRODUCTION

Awake laryngoscopy in the emergency department (ED) is an important and clinically underutilized procedure of which emergency physicians are capable. Many emergency physicians gain familiarity with the laryngeal anatomy only during the brief view achieved during rapid sequence induction and intubation. There is benefit to full visualization of the posterior pharynx, larynx, supraglottis, and subglottic structures without compromising hemodynamics or level of consciousness in the patient in whom there is concern for acute and evolving pathology, including potential loss of airway patency. Direct knowledge of the anatomy and condition of the aforementioned structures enables the clinician to make an informed decision about the necessary management of the presenting problem, and specifically, the best approach to securing the airway. Airway assessment in the ED focuses on the rapid determination of airway anatomy and oxygenation (Figure 1), which guides the appropriate course of intervention (1). As such, it is in the patient with normal or especially abnormal anatomy, yet normal oxygenation, that awake laryngoscopy is appropriate, separate from, or as a prelude to, intubation.

DISCUSSION

Case 1

A 65-year-old woman with a recent history of laryngeal cancer presented to the ED for fever. Her past medical history included the laryngeal cancer, for which she was scheduled to undergo surgery the following week. Her vitals were: heart rate 110 beats/min, respiratory

RECEIVED: 19 June 2016; FINAL SUBMISSION RECEIVED: 15 September 2016;
ACCEPTED: 1 November 2016

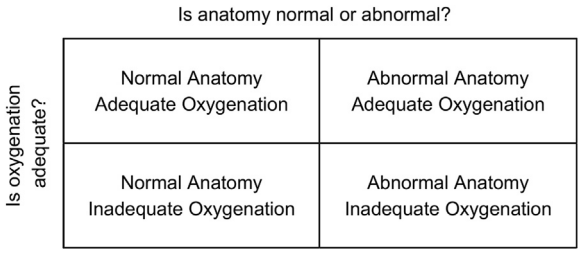

Figure 1. Emergency Airway Assessment. From Vissers RJ, Gibbs MA. The high-risk airway. Emergency Med Clin North Am 2010;28:203–17.

rate 25 breaths/min, temperature 39°C, O_2 Sat 95%, and blood pressure 95/70 mm Hg. Over the first hour, it became clear that she was worsening from severe sepsis and may need to be intubated. She said, "I'm a difficult intubation, doc." The practitioner might wonder what her laryngeal anatomy looked like.

Case 2

A 55-year-old woman presented to the ED by emergency medical services (EMS) for facial swelling. EMS reported that she had a history of angioedema from medications. On examination, her oropharyngeal orifice was nearly occluded by her tongue. She was very anxious and having some increased work of breathing. The practitioner was concerned about how far posteriorly her oropharyngeal swelling went.

Approach

In preparing for awake laryngoscopy, the emergency physician should make an assessment of the available approaches and resources at their disposal, including rigid (oral) and flexible endoscopic (oral or nasal) approaches. Although traditional direct *rigid* laryngoscopy is comfortable for many emergency physicians and often can provide adequate glottic views, for the purposes of awake laryngoscopy without muscle relaxants or deep sedation, alignment of the oral, pharyngeal, and laryngeal axes is very difficult. For the purposes of awake laryngoscopy in the ED, we recommend rigid (video)endoscopic laryngoscopes or flexible (video)endoscopes.

In choosing among these, the first question that needs to be asked is whether the anatomy is likely to be consistent with a rigid laryngoscopic view (Figure 2). Primarily, this depends on whether an adequate view can be achieved by simply viewing around the corner of the oropharyngeal/laryngeal axis interface in one plane, or whether complex anatomy requires movement in two or more anatomic planes. The former group may be viewed through a rigid approach; patients in this group may include those with cervical immobilization, fusion, arthritis or spondylitis, micrognathia, and an anterior larynx, as all of these conditions pose barriers to traditional direct alignment of the oropharyngeal and laryngeal axes, but are facilitated by using hyperangulated rigid endoscopic laryngoscopy, for which there are many tools (e.g., Glidescope [Verathon, Seattle, WA], McGrath [Aircraft Medical, Edinburgh, UK], C-MAC D blade [Karl Storz, Tuttlingen, Germany]). Conversely, the latter group includes patients with acutely distorted anatomy such as oropharyngeal and labial edema or tracheal deviation, small mouth opening, sublingual or deep space infections, and those with known abnormal laryngeal anatomy, including previous radiation or neck surgery. These are situations in which anatomic barriers may prohibit placing a rigid laryngoscope or in which the view obtained by movement through only one plane is inadequate; these situations may require flexible endoscopic laryngoscopy to navigate in two planes (Table 1).

Preparation and Patient Selection

Awake laryngoscopy is predicated on the patient maintaining his or her own airway reflexes and ventilatory drive. Airway reflexes are blunted by local anesthetics. Thus, although awake laryngoscopy can be completed utilizing topical anesthesia without systemic sedation, there are situations in which airway patency may still be lost. Airway patency is both reflexive and volitional, and in patients with depressed levels of consciousness who lack volitional control of their airway, administration of topical anesthesia—and blunting of reflexive control—may result in loss of airway.

Secondly, if awake laryngoscopy is indicated and planned, the clinician must feel comfortable that there is adequate time to prepare and carry out the procedure. Even in the presence of experienced providers, awake laryngoscopy will typically require at least 10 to 15 min. Dynamic evolution of hemodynamics, ventilatory drive, oxygenation, and airway patency needs to be anticipated, and a contingency plan must be reviewed and discussed with the care team prior to moving forward, or patient safety will be compromised. Patients with baseline hypoxia, uncompensated hypercapnia, hemodynamic instability, agitation, and developmental barriers to participation are poor candidates for awake laryngoscopy.

The requirement for supplemental oxygen is not necessarily a contraindication to awake laryngoscopy. Oxygen can be administered throughout the application of anesthesia and during the flexible laryngoscopy using a modified nonrebreather mask (Figure 3). Additionally, working port adapters can be attached to noninvasive positive pressure ventilation masks (bilevel positive airway pressure/continuous positive airway pressure) enabling